

Low Impact Development Demonstration & Validation at a Southeastern Army Installation

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Energy Independence and Security Act of 2007

SEC. 438

STORM WATER RUNOFF REQUIREMENTS FOR FEDERAL DEVELOPMENT PROJECTS

“The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

Wow! This is a really high hurdle...and it seems
to conflict with 100+ years of drainage practice



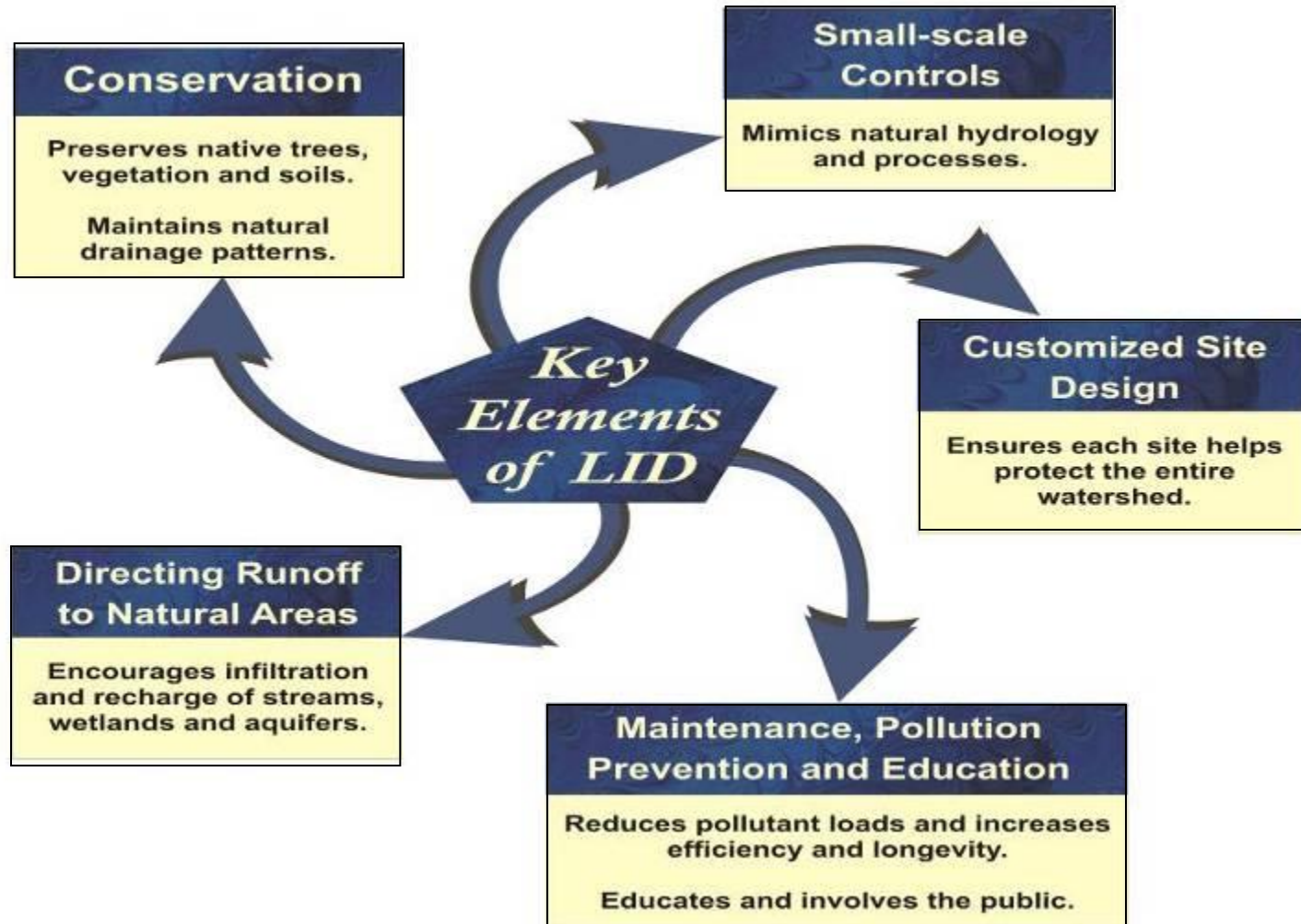
Principles of Low Impact Development (LID)

- EISA, Section 438 and other Army guidance promotes LID approaches over more traditional approaches for stormwater management.
- Manage stormwater close to where precipitation lands.
- Maintain or restore pre-development hydrology, reduce runoff volume and peak runoff rates and reduce potential transport of pollutants to receiving waters.
- Widely proven in nonmilitary applications.
- One limit to mass Army adoption has been lack of demonstrations while combating a perception of increased costs.



Low Impact Development (LID)

principles in a nutshell



But, ERDC and the Corps have already addressed the question!

(Before Section 438 was published)

PUBLIC WORKS TECHNICAL BULLETIN 200-1-36
30 SEPTEMBER 2005

SUSTAINABLE STORMWATER STORAGE ALTERNATIVES FOR ARMY INSTALLATIONS

Find at:

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215

- Describes basic LID practices
- Many graphics showing techniques
- Relates to SPiRiT guidance, but LEED® adaptable



PWTB 200-1-36

PUBLIC WORKS TECHNICAL BULLETIN 200-1-62
1 OCTOBER 2008

LOW IMPACT DEVELOPMENT FOR SUSTAINABLE INSTALLATIONS: STORMWATER DESIGN AND PLANNING GUIDANCE FOR DEVELOPMENT WITHIN ARMY TRAINING AREAS

Find at:

http://www.wbdg.org/ccb/browse_cat.php?o=31&c=215

- Emphasizes non-cantonment training facilities
- Photos and graphics
- Shows possible LEED® credits



PWTB 200-1-62

Easiest technique is to search for PWTB by number

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Representative technologies

- ▶ Bioretention cells
- ▶ Permeable pavement
- ▶ Bioswales
- ▶ Rain gardens
- ▶ Others



LID Examples



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Project Emphasis

- Protect jurisdictional wetlands
- Address and mitigate impact on installation wetlands
- Implement corrective actions for outfalls which can degrade water quality and fill in wetlands
- Support Clean Water Act
- Original intent to upgrade structure, control runoff volume and reduce velocity of stormwater discharge
- Utilize LID with conventional approaches as needed
- Bioretention facilities, modifications to discharge channels, infiltration swales
- Expected results: filtration of metals and surfactants, reduction in quantity of runoff, improved quality of runoff
- Options for groundwater recharge
- Conduct demonstrations, monitor, collect data.





Proposed to collect water from downspouts
and send to rain garden



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Proposed site for rain garden infiltration area



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Temporary Barracks





Culvert filled with sediment and sand



HOWEVER!



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Focus Change

- State inspection prompted emphasis on one site
- Upstream tenant had constructed detention basin with inadequate design
- Also nearby landfill cap washout.
- Result – major erosion problem.





This is the start of
the problem



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30 inch drain from tenant's retention basin



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Planning a Solution

- Selecting possible treatments
- Evaluating tenant's catchment outfall structure
 - ▶ Outlet non-functional
 - ▶ Redesign for staged release
- Reality check



Step infiltration – a preferred approach

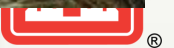




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Summary

- LID testbed demo needed validation for wetland protection
- Overcome by high priority problem
- Solutions must be compatible
 - ▶ Appropriate to magnitude of problem
 - ▶ Compatible with environmental setting



Questions, Comments?

Contact information or for additional information or resources

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